



# CETACEAN DISTRIBUTION IN THE INDIAN EEZ AND CONTIGUOUS SEAS DURING 2008-10



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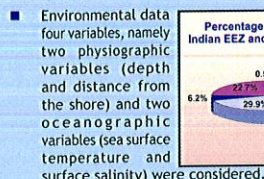
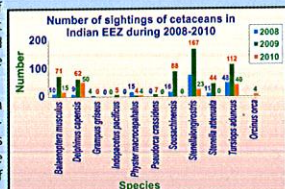
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## Introduction

- During 2003-2007, 35 extensive marine mammal sighting surveys were made in the Indian EEZ and contiguous seas on board FORV Sagar Sampada. The results were published by Afsal et al (2008).
- In the earlier surveys the total number of days of observation was 657 and cetaceans were sighted on 299 days. The total number of sightings was 473, which comprised of 5865 individuals, 14 species identified, 6 were whales and 8 were dolphins. The six whales include 5 species of baleen whales and one species of toothed whale. *Tursiops aduncus* and *Stenella longirostris* were the most dominant species, distributed abundantly in space and time followed by *Delphinus capensis* and *Sousa chinensis*.
- In continuation of the earlier surveys, 12 opportunistic surveys were made onboard FORV Sagar Sampada between September 2008 and December 2010.

## Methodology

- Cetacean sightings surveys were carried out by single trained observer in every cruise by scanning with naked eye and interspersed with a Nikon 10 x 50 mm CFWP handheld binocular with visual range of 4km. Sighting plat forms were situated 16m above surface of sea level.
- A Nikon F80 camera fitted with Nikor 70-300 mm lens was employed to capture appearances of cetaceans in the form of spouts, dorsal fin, flipper, upper body, fluke.
- Data on the distribution of cetaceans were collected along with related environmental variables.
- Simrad GN33 GPS navigator was used to record geographical position of animal sighted area.
- Cetaceans were identified to the lowest taxonomic level possible based on descriptions in FAO field guide (Jefferson, 1993, 1998).



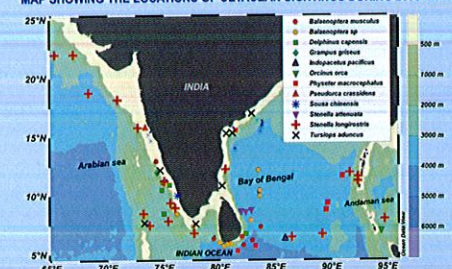
- Environmental data four variables, namely two physiographic variables (depth and distance from the shore) and two oceanographic variables (sea surface temperature and surface salinity) were considered.
- EMCON SBE 9plus underwater shipboard sensors unit provided SST and salinity data.
- For recording the maximum depth at which the animal was sighted, Simrad EK 60 Echo-sounder of frequency 38 kHz was employed.
- Distance between the sighting and nearest shore was calculated using Garmin Map source software version 6.15.6.
- The cruises were not dedicated to marine mammal sightings and the cruise tracks were determined by the needs of other project. Hence the marine mammal surveys can be termed as opportunistic. The study area included the coastal, continental shelf and oceanic waters of the Indian EEZ and the Sri Lankan Sea.

## Important Highlights

### Distribution

- A total of 93 cetacean sightings were recorded in 1307 hours of observation effort in 191 days in the Northeastern Arabian Sea, Southeastern Arabian Sea, Northern Bay of Bengal, Southern Bay of Bengal, Andaman Sea and southern Sri Lankan Sea (Indian Ocean).
- The sightings included the following species: *Stenella longirostris* (spinner dolphin), *Delphinus capensis* (long-beaked common dolphin), *Sousa chinensis* (Indo-Pacific hump-backed dolphin), *Grampus griseus* (Risso's dolphin), *Tursiops aduncus* (bottlenose dolphin), *Stenella attenuata* (Pantropical spotted dolphin), *Balaenoptera musculus* (blue whale), *Physeter macrocephalus* (sperm whale), *Pseudorca crassidens* (false killer whale) and *Orcinus orca* (killer whale).

MAP SHOWING THE LOCATIONS OF CETACEAN SIGHTINGS DURING 2008-2010



- Among the areas surveyed, the Sri Lankan Sea was the richest in diversity and abundance of whales, namely *Balaenoptera musculus* (blue whale; 29 individual sightings), *Balaenoptera sp.*
- The southeastern Arabian Sea was the second most diverse area, from where four species of cetaceans, namely *Stenella longirostris*, *Tursiops aduncus*, *Delphinus capensis* and *Sousa chinensis* were recorded.

## Conclusion

- The 'delphinids' were the most diverse group with eight species. (*Tursiops aduncus* and *Stenella longirostris* were the most abundant and widespread species. Among delphinids, the spinner dolphin was dominant in terms of abundance, whereas Indo-Pacific bottlenose dolphin was the most dominant species in terms of number of records).
- Among large whales *Balaenoptera musculus* was the most abundant species with wide distribution. The sperm whales *Physeter macrocephalus* are found more in the Sri Lankan Sea.
- Cetaceans are found to have a very wide geographical distribution in the Indian EEZ and the contiguous seas. Abundance and species richness are greater in the southeastern Arabian Sea and southern Sri-Lankan waters whereas and relatively sparse in other surveyed area, in particular, in the northern parts of Indian coast. This confirms the earlier report by Afsal et al (2008).
- An important observation made during this survey was the first sighting of Longman's beaked whale (*Indopacetus pacificus*) (southern Bay of Bengal), Killer whale (*Orcinus orca*) from Andaman sea and Blue whale (*Balaenoptera musculus*) from Arabian sea.

## References

- Afsal, V.V., K.S.S.M. Yousuf, B. Anoop, A.K. Anoop, P. Kannan, M. Rajagopalan and E. Vivekanandan A note on cetacean distribution in the Indian EEZ and contiguous seas during 2003-07. *Journal of Cetacean research Management*. 10 (3):209-215, online publication 2008.
- Jefferson, T. A., Leatherwood, S. and Webber, M. A. 1993. *FAO Species Identification Guide. Marine Mammals of the World*. FAO, Rome, 320pp.
- Jefferson, T. A., Webber, M. and Pitman, R.L. 2008. *Marine Mammals of the World: a Comprehensive Guide to their Identification*. Academic Press, London. 573pp.

## SIGHTINGS OF CETACEANS IN THE INDIAN SEAS DURING THE SURVEY



Blue Whale  
*Balaenoptera musculus*  
(Off Mangalore 16-10-10)



Long-Beaked Common Dolphin  
*Delphinus capensis*  
(Off Kollam 21-09-09)



Risso's Dolphin  
*Grampus griseus*  
(Off Kannore 11-10-08)



Longman's Beaked Whale  
*Indopacetus pacificus*  
(Southern Bay of Bengal 28-01-09)



Killer Whale  
*Orcinus orca*  
(Near shore South Nicobar Island 23-10-10)



Sperm Whale  
*Physeter macrocephalus*  
(South East Coast of Sri Lanka 18-11-08)



False Killer Whale  
*Pseudorca crassidens*  
(Off Vengurla Maharashtra 30-3-09)



Indo-Pacific Humpback Dolphin  
*Sousa chinensis*  
(Off Kochi 21-09-08)



Pantropical Spotted Dolphin  
*Stenella attenuata*  
(Off Kakinada 31-8-09)



Spinner Dolphin  
*Stenella longirostris*  
(West off Cape Comorin 15-11-08)



Indo-Pacific Bottlenose Dolphin  
*Tursiops aduncus*  
(Off Kasergod 2-10-08)